

CLAIMS

What is claimed is:

✓ 1. An instrument panel cover for use in an instrument panel of a vehicle compartment having a supplemental inflatable restraint (SIR) system, the instrument panel cover comprising:

a body having an inner surface and an opposing outer surface,

5 5 the body having an air bag cushion deployment region formed in the inner surface thereof, the deployment region being defined by at least one score formed in the inner surface to a predetermined depth, wherein the at least one score is formed by at least one scoring device which contacts the instrument panel cover during the manufacture of the body so as to form the at least one score in the inner surface.

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2. The instrument panel cover as set forth in claim 1, wherein the deployment region includes a plurality of scores arranged in the shape selected from the group consisting of U-shaped, H-shaped, V-shaped, C-shaped, Y-shaped and I-shaped.

3. The instrument panel cover as set forth in claim 1, wherein the deployment region comprises a weakened portion of the instrument panel cover which separates under pressure generated by an inflating air bag cushion which is positioned proximate the inner surface of the 5 instrument panel cover.

4. The instrument panel cover as set forth in claim 1, wherein the instrument panel cover is formed of a synthetic material.

5. The instrument panel cover as set forth in claim 1, wherein the instrument panel cover is formed of a thermoplastic material selected from the group consisting of a polyethylene based polyolefin elastomer and a polypropylene based thermoplastic elastomer.

6. The instrument panel cover as set forth in claim 1, wherein the at least one scoring device contacts the instrument panel cover in-process at an elevated temperature prior to the setting of the instrument panel cover to form the at least one score therein.

7. The instrument panel cover as set forth in claim 1, wherein the at least one score is formed by advancing a contact edge of the at least one scoring device into the inner surface of the instrument panel cover a predetermined distance toward the outer surface, the instrument panel cover 5 being disposed in a mold device.

8. The instrument panel cover as set forth in claim 7, wherein the mold device comprises a female vacuum forming tool.

9. The instrument panel cover as set forth in claim 7, wherein the predetermined distance of the at least one score is controlled by limiting the advancement of the at least one scoring device into the instrument panel cover at the inner surface.

10. The instrument panel cover as set forth in claim 1, wherein the at least one scoring device comprises a scoring blade which forms apart of a moveable cylinder, the at least one scoring blade being expendable and retractable relative to the cylinder, the cylinder and at least one scoring 5 blade being orientated above the body so that upon actuation thereof, the cylinder and at least one scoring blade are lowered to contact the body and form the at least one score.

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11. The instrument panel cover as set forth in claim 10, wherein the at least one scoring blade contacts the instrument panel cover to form the at least one score when the instrument panel cover is at an elevated temperature and deformable.

Sub C 12. A method of forming a hidden, integral passenger air bag door in an instrument panel cover, the method comprising:

forming the instrument panel cover having an inner surface and an opposing outer surface, and

10 forming a deployment region in the inner surface of the instrument panel cover by contacting the inner surface with at least one scoring device during the formation of the instrument panel cover creating at least one score therein, the at least one score defining the deployment region and providing a weakened tear pattern in the inner surface so that deployment of an air bag cushion causes the deployment region to open along the at least one score for deployment of the air bag cushion.

13. The method as set forth in claim 12, wherein forming the deployment region comprises:

5 providing at least one scoring member which is expendable and retractable upon actuation of the device;

10 contacting the at least one scoring member with the instrument panel cover at the inner surface thereof during the formation of the instrument panel cover; and

15 forming the at least one score by advancing the at least one scoring member into the instrument panel cover from the inner surface thereof, the advancement of the at least one scoring member causing the instrument panel cover to thin out in predetermined locations which define the at least one score.

Claims 12-20
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Alan Rubins
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14. The method as set forth in claim 13, wherein the device includes a female vacuum forming tool.

15. The method as set forth in claim 13, wherein the instrument panel cover is formed of a synthetic material.

16. The method as set forth in claim 13, wherein the deployment region has a shape selected from the group consisting of U-shaped, H-shaped, V-shaped, C-shaped, Y-shaped and I-shaped.

17. The method as set forth in claim 13, wherein the at least one scoring member is disposed upon a cylinder which is actuated by an adjustment system for maneuvering the at least one scoring member relative the instrument panel cover.

18. The method as set forth in claim 17, wherein the adjustment system is pneumatic and is controlled by an operator.

19. The method as set forth in claim 17, wherein the adjustment system includes a pneumatic power source and a selector switch for operation thereof.

20. The method as set forth in claim 17, wherein the adjustment system is operated automatically by a controller device.

21. An instrument panel for use in a vehicle compartment having a supplemental inflatable restraint (SIR) system, the instrument panel comprising:

5 a substrate having an inner surface and an opposing outer surface, the substrate having an air bag cushion deployment region formed in the inner surface thereof during the formation of the substrate;

10 an instrument panel cover having an inner surface and an opposing outer surface, the instrument panel cover having an air bag cushion deployment region formed in the inner surface thereof, the deployment region being defined by at least one score formed in the inner surface to a predetermined depth, wherein the at least one score is formed by at least one scoring member which contacts the instrument panel cover during the formation thereof, wherein advancement of the at least one scoring member causes the instrument panel cover to thin out in predetermined locations which

15 define the at least one score,

wherein the cover is disposed adjacent to the substrate.

22. The instrument panel as set in claim 21, further comprising:

a foam layer disposed between the substrate and the instrument panel cover.

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